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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/768,556	01/25/2001	Yukihiro Inoue	L8462.01101	5136

7590 08/09/2002  
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EXAMINER

GEBREMARIAM, SAMUEL A

ART UNIT PAPER NUMBER

2811

DATE MAILED: 08/09/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/768,556

Applicant(s)

INOUE, YUKIHIRO

Examiner

Samuel A Gebremariam

Art Unit

2811

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 29 May 2002.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 5-12 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 5-12 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).  
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413) Paper No(s) \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

## DETAILED ACTION

### *Drawings*

1. Applicant is required to submit a proposed drawing correction in reply to this Office action. However, formal correction of the noted defect can be deferred until the application is allowed by the examiner.

Figures 3a-3d should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g).

### ***Claim Rejections - 35 USC § 112***

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 9 and 10 recite the limitation "protruding regions" in the claims. There is insufficient antecedent basis for this limitation in the claim.

### ***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 5-12, in so far in compliance of 35 U.S.C. 112 are rejected under 35 U.S.C. 103(a) as being unpatentable over Murakami US patent No. 4,819,045 in view Yang US Patent No. 6,306,700.

Regarding claim 9 Murakami teaches a semiconductor device comprising: a gate insulator film 9 of a transistor formed in a predetermined region on a region of a first conductivity type 3; a gate electrode 11 of the transistor formed on the gate insulator film; a source diffusion layer 5 and a drain diffusion layer 7 of a second conductivity type formed on the region of the first conductivity type; a diffusion layer 15 of the first conductivity type formed so as to surround the gate insulator film 9 so as to be in contact therewith, the diffusion layer of the first conductivity type having a higher impurity concentration than the region of the first conductivity type, and in which regions at both ends, in a direction of a channel width, of the gate insulator film protrude from a boundary, in a lateral direction, wherein the diffusion layer of the first conductivity type is formed so as not to be present below the gate insulator film but to be in contact with the protruding regions at both ends, in the direction of the channel width, of the gate insulator film.

Murakami does not teach a source side offset diffusion layer and the drain side offset diffusion layer of the second conductivity type being present around the source diffusion layer and the drain diffusion layer so as to be in contact therewith, respectively; a diffusion layer of the first conductivity type formed so as to surround the source side offset diffusion layer, the drain side offset diffusion layer and the diffusion layer of the first conductivity type having a higher impurity concentration than the region of the first conductivity type, and in which regions at both ends, in a direction of a channel width, of the gate insulator film protrude from a boundary, in a lateral direction between the source side off set diffusion layer and the drain side of set diffusion layer.

Yang teaches forming source (222a)/drain (222b) offset structure with the same conductivity as the source (232a)/drain (232b) diffusion layer such that (222a/222b) is lower in impurity concentration than (232a/232b) and formed around the source/drain diffusion layers (fig. 6).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the source/drain offset structure taught by Yang in the structure of Murakami in order to increase the breakdown voltage (col. 4, line 1-9)

Regarding claim 10, Murakami teaches substantially the entire claimed structure of claim 9 above including wherein the diffusion layer of the first conductivity type is formed so as to be separate from the protruding regions at both ends, in the direction of the channel width, of the gate insulator film (fig. 1).

Regarding claims 11 and 12 Murakami teaches substantially the entire claimed structure of claim 9 above including the transistor is a high voltage transistor, the source diffusion layer and the drain diffusion layer are high impurity concentration, and the source side offset diffusion layer and the drain side offset diffusion layer are lower in impurity concentration than the source diffusion layer and the drain diffusion layer (fig. 1).

Regarding claims 5-8, Murakami teaches substantially the entire claimed structure of claim 9 above including the diffusion layer of first conductivity type is a channel stopper region (fig. 1, col. 1, line 51-68).

***Response to Arguments***

4. Applicant's arguments with respect to claims 9-12 and 5-8 have been considered but are moot in view of the new ground(s) of rejection.

***Conclusion***

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. References C and D are cited as being related to a semiconductor device.

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Samuel Admassu Gebremariam whose telephone number is 703 305 1913. The examiner can normally be reached on 8:00am-4: 30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tom Thomas can be reached on (703) 305-7646. The fax phone numbers


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for the organization where this application or proceeding is assigned are (703) 308-7722 for regular communications and (703) 308-7724 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

Samuel Admassu Gebremariam  
August 6, 2002

  
TOM THOMAS  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 2800